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on A Reciprocal Relation of the Second Order. Given such a relation between three collinear systems; if a point or a line move according to a certain law in one system, according to what law will the corresponding point or line move in the other system? Mr Mallet of Trinity College, Dublin, furnishes the next paper. Richolot has shown that, if $R(x)$ represents a rational function of x and $X = (x - x_1)(x - x_2) \ldots (x - x_{2m})$, in which x_1, x_2 &c. are real quantities, positive or negative, the integral

$$\int \frac{R(x)dx}{\sqrt{X}}$$

can be reduced, by a series of rational substitutions, to the normal form of hyperelliptic integrals. Mallet shows that the desired reduction can be effected by the union and repetition of only four substitutions. Th. Reye communicates an extension of a former article on Algebraic Surfaces apolar to each other. Cauchy and Abel have given a rule for the multiplication of two infinite converging series when the analytic moduli of the series are converging. F. Mertens, in the concluding paper of the number, shows that in order to the application of this rule, it is only necessary that the modulus of one of the series should be convergent.

It is not greatly to the credit of the mathematicians of the vicinity that Crelle's Journal lies on the shelves of the Boston Public Library with uncut leaves; unless, indeed, we are to suppose that all who give themselves to mathematics are so rich that they can afford to take the Journal for themselves. Certainly none who hope to extend the boundaries of the science can afford to do without their Crelle.

RECENT MATHEMATICAL PUBLICATIONS.

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An Investigation of the Orbit of Uranus, with General Tables of its Motion. By Simon Newcomb. (Smithsonian Contributions to Knowledge. No. 262.) Washington, 1872. 4to. 288 pp.

On the General Integrals of Planetary Motion. By Simon Newcomb. (Smithsonian Contributions to Knowledge. No. 281.) Washington, 1874. 4to. 31 pp.

Tidal Researches. By William Ferrel, A. M. (U. S. Coast Survey Report, Appendix.) Washington, 1874. 4to. 268 pp.

Elements of the Differential Calculus, founded on the Method of Rates or Fluxions. Part First. By J. Minot Rice and W. Woolsey Johnson. J. Wiley. New York. 1874. 8vo. 66pp.

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B. Westermann & Co., 524 Broadway, New York, are the agents for the sale of the Smithsonian publications, of whom each paper can be got separately if desired.

NOTES.—Dr. David S. Hart, Stonington, Conn., writes—"I think the alteration from a monthly to a bi-monthly a good measure. The first periodical of this kind, published in this country, was the "Mathematical Correspondent" edited by George Baron and issued annually; the second was the Analyst edited by Dr. Robert Adrain, also published annually; the third was "Nash's Diary," edited by Michael Nash, also issued annually; the fourth was the "Mathematical Diary," edited at first by Dr. Adrain, and afterward by James Ryan, issued semi-annually; the fifth was the "Math'l Miscellany," edited by Prof. Charles Gill, also issued semi-annually; the sixth was the "Mathematical Monthly," edited by J. D. Runkle, issued monthly. Besides these there were issued two or three ephemeral serials, one of them by John D. Williams, who published 14 Challenge Problems, directed against Samuel Ward, (Editor of an American edition of "Young's Algebra), James Ryan, Patrick Lee, and others. Six of these problems are impossible.